

## CLAIMS

1. A gamma camera system comprising:  
a pair of gamma camera heads connected to form substantially a right angle;  
5 an arm on which the pair of cameras heads are mounted; and  
a rotation mechanism comprising a pivot mounted on the arm, allowing for rotation of  
the gamma camera heads with respect to the arm about a line parallel to the connection.
2. A gamma camera system according to claim 1, wherein the gamma camera system is  
10 adapted to allow linear movement of the gamma camera heads in at least one direction  
perpendicular to the line.
3. A gamma camera according to claim 2 wherein the linear motion is provided without  
moving a base on which the gamma camera system is mounted.  
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4. A gamma camera system according to claim 1, wherein the gamma camera system is  
adapted to allow linear motion of the gamma camera heads in all directions perpendicular to  
the line.
- 20 5. A gamma camera system according to claim 1, wherein the gamma camera system is  
adapted to perform at least a partial rotation of the gamma camera heads about an object within  
a quadrant formed by the heads, by combination of linear motion and rotation about the pivot.
6. A gamma camera system according to claim 5, wherein the partial rotation is at least  
25 90°.
7. A gamma camera system according to claim 5, wherein the partial rotation is at least  
180°.
- 30 8. A gamma camera system according to claim 1, wherein the arm is adapted to rotate the  
camera heads such that the line is rotatable about an axis perpendicular to the line.

9. A gamma camera system according to claim 1, wherein the arm comprises between 2 to 6 extensions, which extend telescopically.
10. A gamma camera system according to claim 1, wherein the gamma camera heads  
5 comprise sensors that sense obstacles in a path followed by the camera, in order to prevent the camera from colliding with a scanned object.
11. A gamma camera system according to claim 1, wherein the camera automatically follows a path which is a contour of a scanned object.  
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12. A gamma camera system according to claim 1, wherein the camera follows a preselected path.
13. A gamma camera system according to claim 1, wherein the camera follows a path that  
15 is chosen during motion of the heads about the object.
14. A gamma camera system according to claim 1, adapted to scan a prone patient.
15. A gamma camera system according to claim 14, adapted to scan a standing patient.  
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16. A gamma camera system according to claim 14, adapted to scan a seated patient.
17. A gamma camera system according to claim 1, wherein the gamma camera is adapted to acquire radiation data from all directions of a scanned object.  
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18. A gamma camera system according to claim 1, wherein the gamma camera is adapted to acquire data from 180° about the scanned object.
19. A gamma camera system according to claim 1, wherein the gamma camera is adapted  
30 to perform a scan of the entire length of a patient, without moving the patient.
20. A gamma camera system according to claim 1 and including a controller adapted to reconstruct images within a reconstruction circle and wherein the dimension of each of the

gamma camera heads in a plane perpendicular to the line is at least as large as the diameter of the circle.

21. A gamma camera system according to claim 1 wherein the gamma camera is operative  
5 to reconstruct images within a reconstruction circle and wherein the dimension of each of the gamma camera heads in a plane perpendicular to the line is at least as large as the radius of the circle, but smaller than the diameter of the circle.

22. A gamma camera system according to claim 21 wherein the dimension is less than 1.5  
10 times the radius.

23. A gamma camera head according to claim 1 wherein the heads are rigidly connected at the angle.

15 24. A gamma camera system comprising:  
a pair of gamma camera heads connected to form substantially a right angle; and  
an arm on which the pair of cameras heads are mounted,  
wherein the arm is adapted to allow for linear motion of the pair of camera heads in a  
plane containing the right angle.

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25. A gamma camera according to claim 24 wherein the arm is adapted to move in the plane without moving a base on which the camera system is mounted.

26. A gamma camera system according to claim 24 wherein the arm is adapted to allow for  
25 linear motion in all directions within the plane of the right angle.

27. A gamma camera system according to claim 24 and including a controller operative to reconstruct images within a reconstruction circle and wherein the amount of the linear motion is at least as large as a diameter of the circle.

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28. A gamma camera head according to claim 24 wherein the heads are rigidly connected at the angle.

29. A gamma camera system comprising:  
a pair of gamma camera heads connected to form an angle and adapted to view a reconstruction volume from a plurality of directions having an axis perpendicular to a plane containing the right angle; and  
5 a controller adapted to reconstruct a three dimensional image of radiation sources in the reconstruction volume from data acquired by the camera heads as they rotate about the axis,  
wherein each of the pair of gamma camera heads has a dimension in the plane containing the angle smaller than a largest dimension of the reconstruction volume perpendicular to the axis.  
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30. A gamma camera system according to claim 29 wherein the angle is substantially equal to a right angle.
31. A gamma camera system according to claim 29 wherein each of the gamma camera  
15 heads has a dimension of between 50% and 75% of the largest dimension.
32. A gamma camera head according to claim 29 wherein the heads are rigidly connected at the angle.